APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,069	07/21/2003	Rakesh Agrawal	ARC920030034US1	6946

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ART UNIT	PAPER NUMBER
2161	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/624,069	AGRAWAL ET AL.
	Examiner	Art Unit	
	Kavita Padmanabhan	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>16 October 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>06 November 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Status of Claims

1.   Claims 1-24 are pending.

2.   Claims 1-24 have been amended.

3.   Claims 1-24 are rejected.

Oath/Declaration

4.   The declaration under 37 CFR 1.132 originally filed 9/26/06, with supplemental evidence

filed 10/16/06, is sufficient to overcome the rejection of claims 1-24 based upon the publication

"Randomization in Privacy Preserving Data Mining," December 2002, ACM SIGKDD

Explorations Newsletter, Volume 4, Issue 2, pages 43-48 by Alexandre Evfimievski under 35

U.S.C. 102(a).

Claim Rejections - 35 USC § 101

5.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

6.   **Claims 1-6** are rejected under 35 U.S.C. 101 because the claimed invention is directed to

non-statutory subject matter.

In the instant case, **Claims 1-6** recite methods, but the methods claimed appear to be

directed towards abstract ideas and do not produce a useful, concrete and tangible result.

Regarding **claim 1**, while the active method steps recited appear to provide a result that is useful and concrete (i.e., randomly dropping true items, randomly inserting false items, and estimating the support of an association rule whereby privacy breaches are controlled), there does not appear to be a tangible result produced. In particular, claim 1 does not recite "collecting said randomized dataset in a database". Furthermore, because of the "if" clause, there are embodiments of claim 1 in which an association rule would not be output. **Claims 2-6** are similarly nonstatutory.

The examiner will apply prior art to these claims as best understood, with the assumption that applicant will amend to overcome the stated 101 rejections.

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8.   **Claims 1-24** are rejected under 35 U.S.C. 102(a) as being anticipated by **Rizvi et al., "Maintaining Data Privacy in Association Rule Mining," Proceedings of the 28th VLDB Conference, Hong Kong, China, August 2002, 12 pages** (hereinafter "Rizvi"), cited by applicant.

In regards to **claim 13, Rizvi** teaches a computer-implemented method of mining association

rules from datasets while maintaining privacy of individual transactions within said datasets

through randomization **(Rizvi; Abstract)**, said method comprising:

- creating randomized transactions from an original dataset **(Rizvi; Section 2.3,**

    paragraph 1, lines 1-3 – *"distort the user data before it is subject to the mining*

    process") by:

    - randomly dropping true items from each transaction in said original dataset

        (Rizvi; Section 3.1, paragraphs 1 and 2), and

    - randomly inserting false items into each transaction in said original dataset

        (Rizvi; Section 3.1, paragraphs 1 and 2);

- creating a randomized dataset by collecting said randomized transactions **(Rizvi; Section**

    3.1, paragraph 2, lines 4-7 – *"All the customer tuples are distorted in this fashion and*

    make up the database supplied to the miner");

- collecting said randomized dataset in a database **(Rizvi; Section 3.1, paragraph 2, lines**

    4-7); and

- mining said database to recover an association rule in said original dataset after said

    dropping and inserting processes **(Rizvi; Section 4,** *"Mining the Distorted Database"*)**,**

    wherein said mining comprises:

    - determining support for said association rule in said randomized dataset **(Rizvi;**

        Section 2.2, paragraphs 1 and 2);

    - estimating support of said association rule in said original dataset based on said

        support for said association rule in said randomized dataset **(Rizvi; Section 4,**

paragraph 1, lines 3-4 – *"estimating the true (accurate) supports of itemsets from a distorted database"*; Section 4.1, paragraph 1); and

- outputting said association rule if said support of said association rule in said original data set is estimated to be greater than a predetermined minimum **(Rizvi; Section 2.2, paragraph 2)**,

– wherein, due to said creating of said randomized transactions, privacy breaches of said individual transactions are controlled during said mining **(Rizvi; Abstract)**.

In regards to **claim 14**, Rizvi teaches the method in claim 13, wherein said process of creating randomized transactions comprises per transaction randomizing, such that randomizing operators are applied to each transaction independently **(Rizvi; Section 3.1, paragraph 2, lines 4-7)**.

In regards to **claim 15**, Rizvi teaches the method in claim 13, wherein said process of creating randomized transactions is item-invariant such that a reordering of said transactions does not affect outcome probabilities **(Rizvi; Section 3.1, paragraph 2)**.

In regards to **claim 16**, Rizvi teaches the method in claim 13, wherein said dropping of said true items and said inserting of said false items are carried out to an extent such that the chance of finding a false itemset in a randomized transaction relative to the chance of finding a true itemset in said randomized transaction is above a predetermined threshold **(Rizvi; Section 3.2)**.

In regards to **claim 17**, **Rizvi** teaches the method in claim 16, wherein said predetermined threshold provides that the chance of finding a false itemset in said randomized transaction is approximately equal to the chance of finding a true itemset in said randomized transaction **(Rizvi; Section 3.2)**.

In regards to **claim 18**, **Rizvi** teaches the method in claim 13, wherein said process of creating randomized transactions is performed independently on said transactions prior to the transactions being collected in said database **(Rizvi; Section 3.1, paragraph 2)**.

Claims 1-6, claims 7-12, and claims 19-24 are each rejected with the same rationale given for claims 13-18, respectively.

Response to Arguments

9.   Applicant's arguments filed 10/16/06 with respect to the 35 U.S.C. 101 rejections of the claims have been fully considered. However, claims 1-6 still do not appear to produce a tangible result. In particular, while independent claims 7, 13, and 19 each recite "collecting said randomized dataset in a database", claim 1 does not. Furthermore, because of the "if" clause, there are embodiments of claim 1 in which an association rule would not be output. Therefore, since claim 1 requires neither collecting the randomized dataset in a database nor outputting an association rule, the rejections of claims 1-6 are maintained.

10.   Applicant's arguments filed 10/16/06 with respect to the 1.132 declaration, including the newly submitted evidence provided in pages 19-24 of applicant's remarks, have been fully

considered. The previous rejections of claims 1-24 based upon the publication "Randomization in Privacy Preserving Data Mining," December 2002, ACM SIGKDD Explorations Newsletter, Volume 4, Issue 2, pages 43-48 by Alexandre Evfimievski under 35 U.S.C. 102(a) have been withdrawn accordingly.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kavita Padmanabhan** whose telephone number is **571-272-8352**. The examiner can normally be reached on Monday-Friday, 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Apu Mofiz can be reached on 571-272-4080. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kavita Padmanabhan   December 15, 2007
Assistant Examiner
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ETIENNE LEROUX
PRIMARY EXAMINER